Qualitative Analysis of Content

by
Yan Zhang and Barbara M. Wildemuth

If there were only one truth, you couldn't paint a hundred canvases on the same theme.

--Pablo Picasso, 1966

Introduction

As one of today's most extensively employed analytical tools, content analysis has been used fruitfully in a wide variety of research applications in information and library science (ILS) (Allen & Reser, 1990). Similar to other fields, content analysis has been primarily used in ILS as a quantitative research method until recent decades. Many current studies use qualitative content analysis, which addresses some of the weaknesses of the quantitative approach.

Qualitative content analysis has been defined as:

- "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p.1278),
- "an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification" (Mayring, 2000, p.2), and
- "any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton, 2002, p.453).

These three definitions illustrate that qualitative content analysis emphasizes an integrated view of speech/texts and their specific contexts. Qualitative content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes and patterns that may be manifest or latent in a particular text. It allows researchers to understand social reality in a subjective but scientific manner.

Comparing qualitative content analysis with its rather familiar quantitative counterpart can enhance our understanding of the method. First, the research areas from which they developed are different. Quantitative content analysis (discussed in the previous chapter) is used widely in mass communication as a way to count manifest textual elements, an aspect of this method that is often criticized for missing syntactical and semantic information embedded in the text (Weber, 1990). By contrast, qualitative content analysis was developed primarily in anthropology, qualitative sociology, and psychology, in order to explore the meanings underlying physical messages. Second, quantitative content analysis is deductive, intended to test hypotheses or address questions generated from theories or previous empirical research. By contrast, qualitative content analysis is mainly inductive, grounding the examination of topics and themes, as well as the inferences drawn from them, in the data. In some cases, qualitative content

analysis attempts to generate theory. Third, the data sampling techniques required by the two approaches are different. Quantitative content analysis requires that the data are selected using random sampling or other probabilistic approaches, so as to ensure the validity of statistical inference. By contrast, samples for qualitative content analysis usually consist of purposively selected texts which can inform the research questions being investigated. Last but not the least, the products of the two approaches are different. The quantitative approach produces numbers that can be manipulated with various statistical methods. By contrast, the qualitative approach usually produces descriptions or typologies, along with expressions from subjects reflecting how they view the social world. By this means, the perspectives of the producers of the text can be better understood by the investigator as well as the readers of the study's results (Berg, 2001). Qualitative content analysis pays attention to unique themes that illustrate the range of the meanings of the phenomenon rather than the statistical significance of the occurrence of particular texts or concepts.

In real research work, the two approaches are not mutually exclusive and can be used in combination. As suggested by Smith, "qualitative analysis deals with the forms and antecedent-consequent patterns of form, while quantitative analysis deals with duration and frequency of form"(Smith, 1975, p.218). Weber (1990) also pointed out that the best content-analytic studies use both qualitative and quantitative operations.

Inductive vs. Deductive

Qualitative content analysis involves a process designed to condense raw data into categories or themes based on valid inference and interpretation. This process uses inductive reasoning, by which themes and categories emerge from the data through the researcher's careful examination and constant comparison. But qualitative content analysis does not need to exclude deductive reasoning (Patton, 2002). Generating concepts or variables from theory or previous studies is also very useful for qualitative research, especially at the inception of data analysis (Berg, 2001).

Hsieh and Shannon (2005) discussed three approaches to qualitative content analysis, based on the degree of involvement of inductive reasoning. The first is conventional qualitative content analysis, in which coding categories are derived directly and inductively from the raw data. This is the approach used for grounded theory development. The second approach is directed content analysis, in which initial coding starts with a theory or relevant research findings. Then, during data analysis, the researchers immerse themselves in the data and allow themes to emerge from the data. The purpose of this approach usually is to validate or extend a conceptual framework or theory. The third approach is summative content analysis, which starts with the counting of words or manifest content, then extends the analysis to include latent meanings and themes. This approach seems quantitative in the early stages, but its goal is to explore the usage of the words/indicators in an inductive manner.

The Process of Qualitative Content Analysis

The process of qualitative content analysis often begins during the early stages of data collection. This early involvement in the analysis phase will help you move back and forth between concept development and data collection, and may help direct your

subsequent data collection toward sources that are more useful for addressing the research questions (Miles & Huberman, 1994). To support valid and reliable inferences, qualitative content analysis involves a set of systematic and transparent procedures for processing data. Some of the steps overlap with the traditional quantitative content analysis procedures (Tesch, 1990), while others are unique to this method. Depending on the goals of your study, your content analysis may be more flexible or more standardized, but generally it can be divided into the following steps, beginning with preparing the data and proceeding through writing up the findings in a report.

Step 1: Prepare the Data

Qualitative content analysis can be used to analyze various types of data, but generally the data need to be transformed into written text before analysis can start. If the data come from existing texts, the choice of the content must be justified by what you want to know (Patton, 2002). In ILS studies, qualitative content analysis is most often used to analyze interview transcripts in order to reveal or model people's information related behaviors and thoughts. When transcribing interviews, the following questions arise: (1) should all the questions of the interviewer or only the main questions from the interview guide be transcribed; (2) should the verbalizations be transcribed literally or only in a summary; and (3) should observations during the interview (e.g., sounds, pauses, and other audible behaviors) be transcribed or not (Schilling, 2006)? Your answers to these questions should be based on your research questions. While a complete transcript may be the most useful, the additional value it provides may not justify the additional time required to create it.

Step 2: Define the Unit of Analysis

The unit of analysis refers to the basic unit of text to be classified during content analysis. Messages have to be unitized before they can be coded, and differences in the unit definition can affect coding decisions as well as the comparability of outcomes with other similar studies (De Wever et al., 2006). Therefore, defining the coding unit is one of your most fundamental and important decisions (Weber, 1990).

Qualitative content analysis usually uses individual themes as the unit for analysis, rather than the physical linguistic units (e.g., word, sentence, or paragraph) most often used in quantitative content analysis. An instance of a theme might be expressed in a single word, a phrase, a sentence, a paragraph, or an entire document. When using theme as the coding unit, you are primarily looking for the expressions of an idea (Minichiello et al., 1990). Thus, you might assign a code to a text chunk of any size, as long as that chunk represents a single theme or issue of relevance to your research question(s).

Step 3: Develop Categories and a Coding Scheme

Categories and a coding scheme can be derived from three sources: the data, previous related studies, and theories. Coding schemes can be developed both inductively and deductively. In studies where no theories are available, you must generate categories inductively from the data. Inductive content analysis is particularly appropriate for studies that intend to develop theory, rather than those that intend to describe a particular phenomenon or verify an existing theory. When developing categories inductively from

raw data, you are encouraged to use the constant comparative method (Glaser & Strauss, 1967), since it is not only able to stimulate original insights, but is also able to make differences between categories apparent. The essence of the constant comparative method is (1) the systematic comparison of each text assigned to a category with each of those already assigned to that category, in order to fully understand the theoretical properties of the category; and (2) integrating categories and their properties through the development of interpretive memos.

For some studies, you will have a preliminary model or theory on which to base your inquiry. You can generate an initial list of coding categories from the model or theory, and you may modify the model or theory within the course of the analysis as new categories emerge inductively (Miles & Huberman, 1994). The adoption of coding schemes developed in previous studies has the advantage of supporting the accumulation and comparison of research findings across multiple studies.

In quantitative content analysis, categories need to be mutually exclusive because confounded variables would violate the assumptions of some statistical procedures (Weber, 1990). However, in reality, assigning a particular text to a single category can be very difficult. Qualitative content analysis allows you to assign a unit of text to more than one category simultaneously (Tesch, 1990). Even so, the categories in your coding scheme should be defined in a way that they are internally as homogeneous as possible and externally as heterogeneous as possible (Lincoln & Guba, 1985).

To ensure the consistency of coding, especially when multiple coders are involved, you should develop a coding manual, which usually consists of category names, definitions or rules for assigning codes, and examples (Weber, 1990). Some coding manuals have an additional field for taking notes as coding proceeds. Using the constant comparative method, your coding manual will evolve throughout the process of data analysis, and will be augmented with interpretive memos.

Step 4: Test Your Coding Scheme on a Sample of Text

If you are using a fairly standardized process in your analysis, you'll want to develop and validate your coding scheme early in the process. The best test of the clarity and consistency of your category definitions is to code a sample of your data. After the sample is coded, the coding consistency needs to be checked, in most cases through an assessment of inter-coder agreement. If the level of consistency is low, the coding rules must be revised. Doubts and problems concerning the definitions of categories, coding rules, or categorization of specific cases need to be discussed and resolved within your research team (Schilling, 2006). Coding sample text, checking coding consistency, and revising coding rules is an iterative process and should continue until sufficient coding consistency is achieved (Weber, 1990).

Step 5: Code All the Text

When sufficient consistency has been achieved, the coding rules can be applied to the entire corpus of text. During the coding process, you will need to check the coding repeatedly, to prevent "drifting into an idiosyncratic sense of what the codes mean" (Schilling, 2006). Because coding will proceed while new data continue to be collected, it's possible (even quite likely) that new themes and concepts will emerge and will need to be added to the coding manual.

Step 6: Assess Your Coding Consistency

After coding the entire data set, you need to recheck the consistency of your coding. It is not safe to assume that, if a sample was coded in a consistent and reliable manner, the coding of the whole corpus of text is also consistent. Human coders are subject to fatigue and are likely to make more mistakes as the coding proceeds. New codes may have been added since the original consistency check. Also, the coders' understanding of the categories and coding rules may change subtly over the time, which may lead to greater inconsistency (Miles & Huberman, 1994; Weber, 1990). For all these reasons, you need to recheck your coding consistency.

Step 7: Draw Conclusions from the Coded Data

This step involves making sense of the themes or categories identified, and their properties. At this stage, you will make inferences and present your reconstructions of meanings derived from the data. Your activities may involve exploring the properties and dimensions of categories, identifying relationships between categories, uncovering patterns, and testing categories against the full range of data (Bradley, 1993). This is a critical step in the analysis process, and its success will rely almost wholly on your reasoning abilities.

Step 8: Report Your Methods and Findings

For the study to be replicable, you need to monitor and report your analytical procedures and processes as completely and truthfully as possible (Patton, 2002). In the case of qualitative content analysis, you need to report your decisions and practices concerning the coding process, as well as the methods you used to establish the trustworthiness of your study (discussed below).

Qualitative content analysis does not produce counts and statistical significance; instead, it uncovers patterns, themes, and categories important to a social reality. Presenting research findings from qualitative content analysis is challenging. Although it is a common practice to use typical quotations to justify conclusions (Schilling, 2006), you also may want to incorporate other options for data display, including matrices, graphs, charts, and conceptual networks (Miles & Huberman, 1994). The form and extent of reporting will finally depend on the specific research goals (Patton, 2002).

When presenting qualitative content analysis results, you should strive for a balance between description and interpretation. Description gives your readers background and context and thus needs to be rich and thick (Denzin, 1989). Qualitative research is fundamentally interpretive, and interpretation represents your personal and theoretical understanding of the phenomenon under study. An interesting and readable report "provides sufficient description to allow the reader to understand the basis for an interpretation, and sufficient interpretation to allow the reader to understand the description" (Patton, 2002, p.503-504).

Computer Support for Qualitative Content Analysis

Qualitative content analysis is usually supported by computer programs, such as NVivo[1] or ATLAS.ti.[2] The programs vary in their complexity and sophistication, but their common purpose is to assist researchers in organizing, managing, and coding qualitative data in a more efficient manner. The basic functions that are supported by such programs include text editing, note and memo taking, coding, text retrieval, and node/category manipulation. More and more qualitative data analysis software incorporates a visual presentation module that allows researchers to see the relationships between categories more vividly. Some programs even record a coding history to allow researchers to keep track of the evolution of their interpretations. Any time you will be working with more than a few interviews or are working with a team of researchers, you should use this type of software to support your efforts.

Trustworthiness

Validity, reliability, and objectivity are criteria used to evaluate the quality of research in the conventional positivist research paradigm. As an interpretive method, qualitative content analysis differs from the positivist tradition in its fundamental assumptions, research purposes, and inference processes, thus making the conventional criteria unsuitable for judging its research results (Bradley, 1993). Recognizing this gap, Lincoln and Guba (1985) proposed four criteria for evaluating interpretive research work: credibility, transferability, dependability, and confirmability.

Credibility refers to the "adequate representation of the constructions of the social world under study" (Bradley, 1993, p.436). Lincoln and Guba (1985) recommended a set of activities that would help improve the credibility of your research results: prolonged engagement in the field, persistent observation, triangulation, negative case analysis, checking interpretations against raw data, peer debriefing, and member checking. To improve the credibility of qualitative content analysis, researchers not only need to design data collection strategies that are able to adequately solicit the representations, but also to design transparent processes for coding and drawing conclusions from the raw data. Coders' knowledge and experience have significant impact on the credibility of research results. It is necessary to provide coders precise coding definitions and clear coding procedures. It is also helpful to prepare coders through a comprehensive training program (Weber, 1990).

Transferability refers to the extent to which the researcher's working hypothesis can be applied to another context. It is not the researcher's task to provide an index of transferability; rather, he or she is responsible for providing data sets and descriptions that are rich enough so that other researchers are able to make judgments about the findings' transferability to different settings or contexts.

Dependability refers to "the coherence of the internal process and the way the researcher accounts for changing conditions in the phenomena" (Bradley, 1993, p.437). *Confirmability* refers to "the extent to which the characteristics of the data, as posited by the researcher, can be confirmed by others who read or review the research results" (Bradley, 1993, p.437). The major technique for establishing dependability and

[1] http://www.qsrinternational.com/products_nvivo.aspx.
[2] http://www.atlasti.com/.

confirmability is through audits of the research processes and findings. Dependability is determined by checking the consistency of the study processes, and confirmability is determined by checking the internal coherence of the research product, namely, the data, the findings, the interpretations, and the recommendations. The materials that could be used in these audits include raw data, field notes, theoretical notes and memos, coding manuals, process notes, and so on. The audit process has five stages: preentry, determinations of auditability, formal agreement, determination of trustworthiness (dependability and confirmability), and closure. A detailed list of activities and tasks at each stage can be found in Appendix B in Lincoln and Guba (1985).

Examples

Two examples of qualitative content analysis will be discussed here. The first example study (Schamber, 2000) was intended to identify and define the criteria that weather professionals use to evaluate particular information resources. Interview data were analyzed inductively. In the second example, Foster (2004) investigated the information behaviors of interdisciplinary researchers. Based on semi-structured interview data, he developed a model of these researchers' information seeking and use. These two studies are typical of ILS research that incorporates qualitative content analysis.

Example 1: Criteria for Making Relevance Judgments

Schamber (2000) conducted an exploratory inquiry into the criteria that occupational users of weather information employ to make relevance judgments on weather information sources and presentation formats. To get first-hand accounts from users, she used the time-line interview method to collect data from 30 subjects: 10 each in construction, electric power utilities, and aviation. These participants were highly motivated and had very specific needs for weather information. In accordance with a naturalistic approach, the interview responses were to be interpreted in a way that did not compromise the original meaning expressed by the study participant. Inductive content analysis was chosen for its power to make such faithful inferences.

The interviews were audio taped and transcribed. The transcripts served as the primary sources of data for content analysis. Because the purpose of the study was to identify and describe criteria used by people to make relevance judgments, Schamber defined a coding unit as "a word or group of words that could be coded under one criterion category" (Schamber, 2000, p.739). Responses to each interview were unitized before they were coded.

As Schamber pointed out, content analysis functions both as a secondary observational tool for identifying variables in text and an analytical tool for categorization. Content analysis was incorporated in this study at the pretest stage of developing the interview guide as a basis for the coding scheme, as well as assessing the effectiveness of particular interview items. The formal process of developing the coding scheme began shortly after the first few interviews. The whole process was an iteration of coding a sample of data, testing inter-coder agreement, and revising the coding scheme. Whenever the percentage of agreement did not reach an acceptable level, the coding scheme was revised (Schamber, 1991). The author reported that, "based on data from the first few respondents, the scheme was significantly revised eight times and tested by 14

coders until inter-coder agreement reached acceptable levels" (Schamber, 2000, p.738). The 14 coders were not involved in the coding at the same time; rather, they were spread across three rounds of revision.

The analysis process was inductive and took a grounded theory approach. The author did not derive variables/categories from existing theories or previous related studies, and she had no intention of verifying existing theories; rather, she immersed herself in the interview transcripts and let the categories emerge on their own. Some categories in the coding scheme were straightforward and could be easily identified based on manifest content, while others were harder to identify because they were partially based on the latent content of the texts. The categories were expected to be mutually exclusive (distinct from each other) and exhaustive. The iterative coding process resulted in a coding scheme with eight main categories.

Credibility evaluates the validity of a researcher's reconstruction of a social reality. In this study, Schamber carefully designed and controlled the data collection and data analysis procedures to ensure the credibility of the research results. First, the time-line interview technique solicited respondents' own accounts of the relevance judgments they made on weather information in their real working environments instead of in artificial experimental settings. Second, non-intrusive inductive content analysis was used to identify the themes emerging from the interview transcripts. The criteria were defined in respondents' own language as it appeared in the interviews. Furthermore, a peer debriefing process was involved in the coding development process, which ensures the credibility of the research by reducing the bias of a single researcher. As reported by Schamber (1991), "a group of up to seven people, mostly graduate students including the researcher, met weekly for most of a semester and discussed possible criterion categories based on transcripts from four respondents" (p.84-85). The credibility of the research findings also was verified by the fact that most criteria were mentioned by more than one respondent and in more than one scenario. Theory saturation was achieved as mentions of criteria became increasingly redundant.

Schamber did not claim transferability of the research results explicitly, but the transferability of the study was made possible by detailed documentation of the data processing in a Codebook. The first part of the Codebook explained procedures for handling all types of data (including quantitative). In the second part, the coding scheme was listed; it included: identification numbers, category names, detailed category definitions, coding rules, and examples. This detailed documentation of the data handling and the coding scheme makes it easier for future researchers to judge the transferability of the criteria to other user populations or other situational contexts. The transferability of the identified criteria also was supported by the fact that the criteria identified in this study were also widely documented in previous research works.

The dependability of the research findings in this study was established by the transparent coding process and inter-coder verification. The inherent ambiguity of word meanings, category definitions, and coding procedures threaten the coherence and consistency of coding practices, hence negatively affecting the credibility of the findings. To make sure that the distinctions between categories were clear to the coders, the Codebook defined them. To ensure coding consistency, every coder used the same version of the scheme to code the raw interview data. Both the training and the experience of the coder are necessary for reliable coding (Neuendorf, 2002). In this study,

the coders were graduate students who had been involved the revision of the coding scheme and, thus, were experienced at using the scheme (Schamber, 1991). The final coding scheme was tested for inter-coder reliability with a first-time coder based on simple percent agreement: the number of agreements between two independent coders divided by the number of possible agreements. As noted in the previous chapter, more sophisticated methods for assessing inter-coder agreement are available. If you're using a standardized coding scheme, refer to that discussion.

As suggested by Lincoln and Guba (1985), confirmability is primarily established through a comfirmability audit, which Schamber did not conduct. However, the significant overlap of the criteria identified in this study with those identified in other studies indicates that the research findings have been confirmed by other researchers. Meanwhile, the detailed documentation of data handling also provides means for comfirmability checking.

When reporting the trustworthiness of the research results, instead of using the terms, "credibility," "transferability," "dependability," and "confirmability," Schamber used terms generally associated with positivist studies: "internal validity," "external validity," "reliability," and "generalizability." It is worth pointing out that there is no universal agreement on the terminology used when assessing the quality of a qualitative inquiry. However, we recommend that the four criteria proposed by Lincoln and Guba (1985) be used to evaluate the trustworthiness of research work conducted within an interpretive paradigm.

Descriptive statistics, such as frequency of criteria occurrence, were reported in the study. However, the purpose of the study was to describe the range of the criteria employed to decide the degree of relevance of weather information in particular occupations. Thus, the main finding was a list of criteria, along with their definitions, keywords, and examples. Quotations excerpted from interview transcripts were used to further describe the identified criteria, as well as to illustrate the situational contexts in which the criteria were applied.

Example 2: Information Seeking in an Interdisciplinary Context

Foster (2004) examined the information seeking behaviors of scholars working in interdisciplinary contexts. His goal was threefold: (1) to identify the activities, strategies, contexts, and behaviors of interdisciplinary information seekers; (2) to understand the relationships between behaviors and context; and (3) to represent the information seeking behavior of interdisciplinary researchers in an empirically grounded model. This study is a naturalist inquiry, using semi-structured interviews to collect direct accounts of information seeking experiences from 45 interdisciplinary researchers. The respondents were selected through purposive sampling, along with snowball sampling. To "enhance contextual richness and minimize fragmentation" (Foster, 2004, p.230), all participants were interviewed in their normal working places.

In light of the exploratory nature of the study, the grounded theory approach guided the data analysis. Foster did not have any specific expectations for the data before the analysis started. Rather, he expected that concepts and themes related to interdisciplinary information seeking would emerge from the texts through inductive content analysis and the constant comparative method.

Coding took place in multiple stages, over time. The initial coding process was an open coding process. The author closely read and annotated each interview transcript. During this process, the texts were unitized and concepts were highlighted and labeled. Based on this initial analysis, Foster identified three stages of information seeking in interdisciplinary contexts – initial, middle, and final – along with activities involved in each stage. Subsequent coding took place in the manner of constantly comparing the current transcript with previous ones to allow the emergence of categories and their properties. As the coding proceeded, additional themes and activities emerged – not covered by the initially-identified three-stage model. Further analysis of emergent concepts and themes and their relationships to each other resulted in a two-dimensional model of information seeking behaviors in the interdisciplinary context. One dimension delineates three nonlinear core processes of information seeking activities: opening, orientation, and consolidation. The other dimension consists of three levels of contextual interaction: cognitive approach, internal context, and external context.

The ATLAS.ti software was used to support the coding process. It allows the researcher to code the data, retrieve text based on keywords, rename or merge existing codes without perturbing the rest of the codes, and generate visualizatios of emergent codes and their relationships to one another. ATLAS.ti also maintains automatic logs of coding changes, which makes it possible to keep track of the evolution of the analysis.

As reported by Foster, coding consistency in this study was addressed by including three iterations of coding conducted over a period of one year. However, the author did not report on the three rounds of coding in detail. For example, he did not say how many coders were involved in the coding, how the coders were trained, how the coding rules were defined, and what strategies were used to ensure transparent coding. If all three rounds of coding were done by Foster alone, there was no assessment of coding consistency. While this is a common practice in qualitative research, it weakens the author's argument for the dependability of the study.

The issue of trustworthiness of the study was discussed in terms of the criteria suggested by Lincoln and Guba (1985): credibility, dependability, transferability, and confirmability. Credibility was established mainly through member checking and peer debriefing. Member checking was used in four ways at various stages of data collection and data analysis: (1) at the pilot stage, the interviewer discussed the interview questions with participants at the end of each interview; (2) during formal interviews, the interviewer fed ideas back to participants to refine, rephrase, and interpret; (3) in an informal post-interview session, each participant was given the chance to discuss the findings; and (4) an additional session was conducted with a sample of five participants willing to provide feedback on the transcripts of their own interview as well as evaluate the research findings. Peer debriefing was used in the study to "confirm interpretations and coding decisions including the development of categories" (Foster, 2004, p.231). No further details about who conducted the debriefing or how it was conducted were reported in the paper.

The transferability of the present study was ensured by "rich description and reporting of the research process" (Foster, 2004, p.230). Future researchers can make transferability judgments based on the detailed description provided by Foster. The issues of dependability and confirmability were addressed through the author's "research notes, which recorded decisions, queries, working out, and the development results" (Foster,

2004, p.230). By referring to these materials, Foster could audit his own inferences and interpretations, and other interested researchers could review the research findings.

The content analysis findings were reported by describing each component in the model of information seeking behaviors in interdisciplinary contexts that emerged from this study. Diagrams and tables were used to facilitate the description. A few quotations from participants were provided to reinforce the author's abstraction of three processes of interdisciplinary information seeking: opening, orientation, and consolidation. Finally, Foster discussed the implications of the new model for the exploration of information behaviors in general.

Conclusion

Qualitative content analysis is a valuable alternative to more traditional quantitative content analysis, when the researcher is working in an interpretive paradigm. The goal is to identify important themes or categories within a body of content, and to provide a rich description of the social reality created by those themes/categories as they are lived out in a particular setting. Through careful data preparation, coding, and interpretation, the results of qualitative content analysis can support the development of new theories and models, as well as validating existing theories and providing thick descriptions of particular settings or phenomena.

Cited Works

Allen, B., & Reser, D. (1990). Content analysis in library and information science research. *Library & Information Science Research, 12*(3), 251-260.

Berg, B.L. (2001). *Qualitative Research Methods for the Social Sciences.* Boston: Allyn and Bacon.

Bradley, J. (1993). Methodological issues and practices in qualitative research. *Library Quarterly, 63*(4), 431-449.

De Wever, B., Schellens, T., Valcke, M., & Van Keer, H. (2006). Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. *Computer & Education, 46,* 6-28.

Denzin, N.K. (1989). *Interpretive Interactionism.* Newbury Park, CA: Sage.

Foster, A. (2004). A nonlinear model of information-seeking behavior. *Journal of the American Society for Information Science & Technology, 55*(3), 228-237.

Glaser, B.G., & Strauss, A.L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine.

Hsieh, H.-F., & Shannon, S.E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288.

Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic Inquiry*. Beverly Hills, CA: Sage Publications.

Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research, 1*(2). Retrieved July 28, 2008, from http://217.160.35.246/fqs-texte/2-00/2-00mayring-e.pdf.

Miles, M., & Huberman, A.M. (1994). *Qualitative Data Analysis*. Thousand Oaks, CA: Sage Publications.

Minichiello, V., Aroni, R., Timewell, E., & Alexander, L. (1990). *In-Depth Interviewing: Researching People*. Hong Kong: Longman Cheshire.
Neuendorf, K.A. (2002). *The Content Analysis Guidebook*. Thousand Oaks, CA: Sage Publications.
Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods.* Thousand Oaks, CA: Sage.
Picasso, P. (1966). Quoted in Hélène Parmelin, "Truth," In *Picasso Says*. London: Allen & Unwin (trans. 1969).
Schamber, L. (2000). Time-line interviews and inductive content analysis: Their effectivenss for exploring cognitive behaviors. *Journal of the American Society for Information Science, 51*(8), 734-744.
Schamber, L. (1991). *Users' Criteria for Evaluation in Multimedia Information Seeking and Use Situations*. Ph.D. dissertation, Syracuse University.
Schilling, J. (2006). On the pragmatics of qualitative assessment: Designing the process for content analysis. *European Journal of Psychological Assessment, 22*(1), 28-37.
Smith, H.W. (1975). *Strategies of Social Research: The Methodological Imagination.* Englewood Cliffs, NJ: Prentice-Hall.
Tesch, R. (1990). *Qualitative Research: Analysis Types & Software Tools.* Bristol, PA: Falmer Press.
Weber, R.P. (1990). *Basic Content Analysis*. Newbury Park, CA: Sage Publications.